

Test and Repair Pressure Safety Valves



Partner Reported Opportunities (PROs)
for Reducing Methane Emissions

PRO Fact Sheet No. 607

Applicable sector(s):

☒ Production ☒ Processing ☒ Transmission and Distribution

Partners reporting this PRO: Marathon Oil Company

Other related PROs: Test Gate Station Pressure Relief Valves with Nitrogen, Conduct DI&M at Remote Facilities

Compressors/Engines ☐
Dehydrators ☐
Pipelines ☐
Pneumatics/Controls ☐
Tanks ☐
Valves ☒
Wells ☐
Other ☐

Technology/Practice Overview

Description

If pressure in a compressor, pipeline, or vessel surges to levels exceeding maximum allowable operating pressure, pressure safety valves (PSVs) open and vent excess gas pressure to the atmosphere. Over time, the seals wear or become fouled with process debris, and leak methane-containing gas to the atmosphere. Small leaks tend to grow larger through erosion-corrosion. The partner reported a practice of testing pressure safety valves for leakage, and repairing them when cost-effective. A proactive testing and repair program can yield significant methane emissions reductions.

Operating Requirements

Testing may be done with an organic vapor analyzer (OVA), acoustical leak detector, or high-volume sampler while PSVs are in service. Safety precautions must be taken while testing operating equipment.

Applicability

This practice can be applied to all pressure safety valves.

Methane Savings: 170 Mcf per year

Costs

Capital Costs (including installation)

☐ <\$1,000 ☐ \$1,000 – \$10,000 ☐ >\$10,000

Operating and Maintenance Costs (annual)

☐ <\$100 ☒ \$100-\$1,000 ☐ >\$1,000

Payback (Years)

☐ 0–1 ☐ 1–3 ☒ 3–10 ☐ >10

Benefits

Reducing methane emissions was a primary justification for the project.

Methane Emissions Reductions

The methane emissions savings are determined for compressor PSVs. The emissions factor averages 57.5 Mcf per year per valve. One partner reported methane savings of 853 Mcf per year.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 170 Mcf per year apply to a compressor with three PSVs-two intermediate stages and the discharge line.

Discussion

PSV leakage eventually grows to a volume that would economically justify the investment in manpower and equipment to find and repair an individual valve. While there are no capital costs, this practice is more cost effective when applied to a large collection of valves.